

REMARKS**Status of the Claims**

Claims 1-22 are pending in the application, of which claims 12, 13 and 18 are being amended. Applicant requests entry of these amendments, which are fully supported by the Specification and original claims and add no new matter.

Applicant appreciates the Examiner's indication of allowability of claims 1-11.

Reconsideration of the rejection of claims 12 to 22 in view of the amendments and remarks herein is respectfully requested.

102 (c) Rejection Under Sui et al.**Claim 12 and dependent claims**

The Examiner rejected claims, 12-20 under 35 USC 102(e) as anticipated by Sui et al. (6, 559,942). Sui et al. discloses an apparatus for conducting an interferometric process, having an endpoint detection means that uses laser interferometry at a wavelength of 254 nm. The Examiner further states that "Inclusion of material worked on by a machine as element in claim may not patentability since the claim is not otherwise allowable." Examiner continues to state that "it is irrelevant that the apparatus disclosed above does not specifically teach the process limitations in applicant's apparatus claims since the apparatus taught above is clearly capable of performing applicant's recited process."

Claim 12 has been amended to recite, inter alia, a light beam source to reflect a light beam from the substrate, the light beam having a wavelength that has a coherence length in the substrate of from about 1.5 to about 4 times the thickness of the material; a light detector to detect the reflected light beam and generate a signal in response to a measured intensity of the reflected light beam; and a controller to evaluate the signal to determine an endpoint of the substrate etching process.

The amendment to claim 12, which recites "the light beam source adapted to direct a light beam having a wavelength that has a coherence length in the substrate of from about 1.5 to about 4 times the thickness of the material," now positively recites the structural limitation of this claim element. Specifically, the claim now reads on a light beam source having a structure that provides a desirable wavelength range. Not all light beam sources can provide this wavelength range. Furthermore, the advantages of a light beam source structure that generates a light beam having the claimed wavelength range are not known from teachings to any light beam source, such as the cited laser.

The radiation source element shown in the Sui et al. reference is not the same element as the light beam source of claim 12, since the radiation source of Sui et al. can be, for example, the plasma formed in the chamber itself or a laser having particular wavelengths, that is not the same as the claimed light beam source having a wavelength that has a coherence length in the substrate of from about 1.5 to about 4 times the thickness of the material as claimed in claim 12. The claimed light beam source is a structure adapted to generate particular wavelengths that correspond to a particular thickness of a material, and this structure can, for example, generate photons having particular wavelengths, modify a conventional laser or detector with optical filters or other structural features. Since the radiation source disclosed by Sui et al. is not the equivalent of the light beam source structure disclosed in the instant claim, Sui et al. does not anticipate the light beam source of the instant claim. See In re Mulder, 716 F.2d 1542, 219 USPQ 189 (Fed. Cir. 1983).

Furthermore, claim 12 includes a combination of elements that include, a laser source to generate a particular type of light beam, a light detector to detect that particular light beam after it is a reflected light beam, and generate a signal in response to a measured intensity of the beam, and a controller to evaluate the signal from the detector to determine an endpoint of the substrate etching process. In contrast, the system taught by Sui et al. uses a light source not adapted to the instant function, a different light detector and a different controller. For example, not every light detector can detect the claimed particular type of light beam and generate a signal in response to the measured intensity of the light beam. Sui et al. also does not teach the claimed controller because the program code contained in the software program of the controller is a structural feature or element of the apparatus. The controller taught by Sui et al. comprises process monitoring software to monitor the processes being performed in the chamber that has program code to analyze an incoming signal trace provided by the radiation detector to determine a process endpoint. In contrast, the program code contained in the controller of the instant claims is a different program code that operates with a different light source and light detector. Thus, claim 12 has several different elements and is to a specific apparatus that is distinct from the Sui et al. apparatus. For these reasons, claim 12 and the claims dependent therefrom are allowable over Sui et al.

Claim 18 and dependent claims

Claim 18 is being amended to recite an apparatus for etching a substrate comprising a chamber with a substrate support, a gas distributor, a gas energizer, a light beam source to direct a light beam onto the substrate, the light beam source adapted to direct a light beam having a wavelength that maximizes an absorption differential that is a difference between the absorption of the light beam in the patterned mask and the absorption of the light beam in the material, and a light detector and controller. As in claim 12, the amendments to claim 18, now positively recite structural limitations on the type of light beam source, namely one that provides a light beam having particular wavelengths.

Sui et al. does not disclose a light beam source adapted to direct a light beam having a wavelength that maximizes an absorption differential that is a difference

between the absorption of the light beam in the patterned mask and the absorption of the light beam in the material, and a corresponding light detector and controller to receive signals and evaluate the same. For example, in one version, Sui et al. discloses an apparatus having a radiation source, and a radiation polarizer adapted to polarize a radiation to different polarization angles. The radiation source and polarizer are not a light beam source having structure that is adapted to direct a light beam having a wavelength that maximizes an absorption differential, as claimed.

Moreover, as explained above, the controller, taught by Sui et al. comprises process monitoring software to monitor the processes being performed in the chamber that has program code to analyze a signal trace provided by a particular radiation detector to determine a process endpoint. In contrast, the claimed controller comprises, for example, structural elements such as program code that is a different program code which is designed to operate on different signals. Thus, claim 18 has structural elements undisclosed by Sui et al., and consequently, is to a specific apparatus that is distinct from the Sui et al. apparatus. For these reasons, claim 18 and the claims dependent therefrom are allowable over Sui et al.

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CONCLUSION

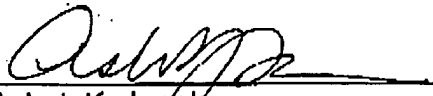
For the foregoing reasons, allowance of the instant application is respectfully requested. Should the Examiner have any questions regarding the above amendments or remarks, the Examiner is requested to telephone Applicant's representative at the number listed below.

Respectfully submitted,

JANAH & ASSOCIATES, P.C.

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By:


Ashok K. Janah
Reg. No. 37,487

Please direct telephone calls to:

Ashok K. Janah
(415) 538-1555

Please continue to send all correspondence to:

Patent Department, M/S 2001
APPLIED MATERIALS, INC.
P.O. Box 450A
Santa Clara, California 95052